AMENDMENTS IN THE CLAIMS:

Claim 1 (original) A coefficient update method for a time domain equalizer of a DMT system which uses multi-carrier modulation, comprising:

A step of calculating the response characteristics of a channel and those of said time domain equalizer from the output of said time domain equalizer during a training period, and updating the coefficient of said time domain equalizer; and

A step of calculating the characteristic parameters of a channel and those of said time domain equalizer from the output of said time domain equalizer using a synchronization signal during a data period and updating the coefficient of said time domain equalizer.

Claim 2 (currently amended) The coefficient update method for the time domain equalizer according to Claim 1, wherein

said coefficient update step has a step of calculating the coefficient of said time domain equalizer to minimize the errors of said response characteristic using a least mean square (LMS) method ~~the LMS~~.

Claim 3 (currently amended) A coefficient update method for the time domain equalizer of a DMT system which used multi-carrier modulation, comprising

a step of calculating the response characteristics of a channel and those of said time domain equalizer from the output of an FFT at a subsequent stage of said time domain equalizer; and

a step of calculating a coefficient of said time domain equalizer to minimize the errors of said response characteristics using a least mean square (LMS) method ~~the LMS~~.

Claim 4 (currently amended) The coefficient update method for the time domain equalizer according to Claim 3, wherein

said step of calculating said coefficient comprises;

a step of calculating a convolution coefficient to minimize the errors of said response characteristic to minimize the errors of said response characteristics using a least mean square (LMS) method ~~the LMS~~; and

a step of updating the coefficient of said time domain equalizer using said convolution coefficient.

Claim 5 (original) A receive method of a DMT system which uses mult-carrier modulation, comprising;

a time domain equalizer step of equalizing receive signals in the time domain;

a step of performing FFT processing on the output of said time domain equalizer;

a step of performing frequency domain equalizer processing on said FFT-processed output;

a step of decoding the output of said frequency domain equalizer; and

a step of calculating the response characteristic of a channel and those of said time domain equalizer from the output of said time domain equalizer according to the synchronization pattern of a training period and of a data period, and updating the coefficient of said time domain equalizer.

Claim 6 (currently amended) The receive method according to Claim 5, wherein said coefficient update step comprises a step of calculating the coefficient of said time domain equalizer to minimize the errors of said response characteristic using a least mean square (LMS) method ~~the LMS~~.

Claim 7 (original) A receive method of a DMT system which uses multi-carrier modulation, comprising;

a time domain equalizer step of equalizing receive signals in the time domain;

a step of performing FFT processing on the output of said time domain equalizer;

a step of performing frequency domain equalizer processing on said FFT-processed output;

a step of decoding the output of said frequency domain equalizer; and

a step of calculating the response characteristics of a channel and those of said time domain equalizer from the output of said FFT, and updating the coefficient of said time domain equalizer.

Claim 8 (currently amended) The receive method according to Claim 7, wherein said coefficient update step further comprises a step of calculating the coefficient of said time domain equalizer to minimize the errors of said response characteristics using a least mean square (LMS) method ~~the LMS~~.

Claim 9 (original) A DMT system which uses multi-carrier modulation, comprising;

a channel;

a transmitter which performs multi-carrier modulation on a training pattern during a training period and on a synchronization pattern during a data period, and outputs the patterns to the channel; and

a receiver which performs multi-carrier demodulation on receive signals from said channel,

wherein said receiver equalizes said receive signals in the time domain using a time domain equalizer, performs FFT processing on the output of said time domain equalizer, then equalizes said FFT-processes output in the frequency domain using a frequency domain equalized, and also calculates the response characteristic of the channel and those of said time domain equalizer from the output of said time domain equalizer according to the training pattern and the synchronization pattern, and updates the coefficient of said time domain equalizer.

Claim 10 (currently amended) A DMT system which uses multi-carrier modulation, comprising:

a channel;

a transmitter which performs multi-carrier modulation on a training pattern and outputs the pattern to the channel; and

a receiver which performs multi-carrier demodulation on receive signals from said channel,

wherein said receiver equalizes said receive signals in the time domain by a time domain equalizer, performs FFT processing on the output of said time domain equalizer, then equalizes said FFT-processed output in the frequency domain using a frequency domain equalizer, and also

calculates the response characteristics of said channel and those of said time domain equalizer from said ~~FET~~ FFT-processed output, and updates the coefficient of said time domain equalizer.

Claim 11 (currently amended) A DMT modem which uses multi-carrier modulation, comprising;

a transmitter which performs multi-carrier modulation on a training pattern ~~patterns~~ during a training period and on a synchronization pattern during a data period, and outputs the pattern to a channel; and

a receiver which performs multi-carrier demodulation on receive signals from said channel,

wherein said receiver equalizes said receive signals in the time domain using a time domain equalizer, performs FFT processing on the output of said time domain equalizer, then equalizes said FFT-processed output in the frequency domain using a frequency domain equalizer, and also calculates the response characteristics of the channel and those of said time domain equalizer from the output of said time domain equalizer according to the training pattern and the synchronization pattern, and updates the coefficient of said time domain equalizer.

Claim 12 (original) A DMT modem which uses multi-carrier modulation, comprising;

a transmitter which performs multi-carrier modulation on a training pattern and outputs the pattern to a channel; and

a receiver which performs multi-carrier demodulation on receive signals from said channel,

wherein said receiver equalizes said receive signals in the time domain using a time domain equalizer, performs FFT processing on the output of said time domain equalizer, then equalizes said FFT-processed output in the frequency domain using a frequency domain equalizer, and also calculates the response characteristics of said channel and said time domain equalizer from the output of said FF, and updates the coefficient of said time domain equalizer.

Claim 13 (currently amended) A coefficient update method for a time domain equalizer (TEQ) ~~TEQ~~ wherein the coefficient algorithm of the TEQ is given by the following formula;

$Z = Y \times Ww$

$Bu = Z/X'$

$E = Z - Bw \times X'$

$Vu = 1 - \alpha \times E \times Z'$

Ww (new) = Ww (old) * Vu ~~Vw~~

where Z is an equalized response, Y is a receive signal, Ww is a convolution parameter, Bu is an update channel target, X' is a pseudo-random bit string (PRBS) signal, Bw is a response parameter, E is an error signal, Vu is an updated convolution parameter, α is a step size, and Z' is a complex conjugate of Z.

Claim 14 (currently amended) A coefficient update method for a time domain equalizer (TEQ) ~~TEQ~~ wherein the coefficient of the TEQ is updated by a signal after a cyclic prefix of a synchronous signal is removed.

Claim 15 (canceled)